Key concept : FIM Instrument, validity,
Back Translation

Translation and Validity test
of the FIM instrument and Guide*

OkNam Hwang, RN, PhD**· KapChul Cho, RN, PhD***

. Introduction

Until recently, rehabilitation clinicians have had no universally accepted, consistent terminology to communicate about disability. Many had long recognized the need for such terminology, its potential value, and the difficulties of achieving uniformity. Then in 1984 the department of rehabilitation of rehabilitation medicine at UB developed a system to document - in a uniform fashion - the severity of patient disability and the outcomes of medical rehabilitation

The goal of task force was to develop a minimum data set that would be appropriate, that is, would include only key patient functional attributes - that were common and useful, that would be discipline-free, and

acceptable to clinicians, administrators, and researchers. The task force also had to create a rating scale to measure the items. Finally, the rating scale (FIMTM instrument) had to be demonstrated to be a valid and reliable measure(UDS$^{MR}_{SM}$, 1997).

Nowadays, interest in the outcome produced by medical treatment has been increasing in modern health care. In the case of rehabilitation medicine, the length of patient care is longer than in any other area, with the result that outcome research has become more important in this field of medicine. With this in mind, Functional Independent Measure(FIM) has become one of the most widely used functional assessment scales in medical rehabilitation. The FIM is a very useful instrument that can provide a uniform way of communicating about disability and in evaluating the rehabilitation progress and outcome of patients with disabilities. The FIM has been applied to patients who have been treated in rehabilitation medicine departments and has proven to be a useful tool for clinicians caring for people who are disabled from a variety of impairments including stroke, brain injury, orthopedic disease, spinal cord dysfunction and arthritis.

Since the 1980s, FIM has been developed as a standardized, generalized and valid functional

assessment tool for disabled patients. Currently FIM is used in over 1,300 rehabilitation facilities worldwide to document the effectiveness and efficacy of medical rehabilitative care (UDSMRSM, 1997). However, there has been no research trial for FIM in Korea. As a result of increasing cerebro-vascular diseases and industrial traumatic diseases, the social needs for medical rehabilitation have been increased and systematic functional assessment has become an essential component of rehabilitation medicine.

The purpose of this study is to translate FIM into Korean and to investigate the content validity and back translation of the Korean version to fit Korean culture.

2. FIM instrument

In the 1960s, the science of measuring functional status began with the introduction of the Barther Index and then various instruments to measure disability including FIM were introduced in Korean medical field and interdisciplines so often used by many medical, nursing and PT staffs without conflicts.

Recently, the FIM has been used successfully to provide a functional assessment of patients in various clinical settings including stroke (Alexander, 1994), AIDS(O'Dell et al., 1991), cancer(Fucile, 1992), and SCI(Watson et al, 1995). Plans to create the Uniform Data Set for Medical Rehabilitation, which includes the FIM instrument, began in response to an interest in measuring the outcome of medical rehabilitation

The FIM instrument is an 18 item, 6 area, 7 level scale of assessment that includes self-care (feeding, grooming, bathing, dressing upper body, dressing lower body, toileting), sphincter control (bladder management, bowel management), mobility (transfers to and from bed/wheelchair, toilet, tub-shower), locomotion (walk/ wheelchair,

stair), communication (comprehension, expression), social cognition (social interaction, problem solving, memory).

Total FIM scores range from a minimum of 18 to a maximum of 126, representing the highest level of independence. FIM data may also be described in terms of motor and cognitive FIM. Motor FIM is the sum of the first 13 FIM item scores and ranges from a minimum of 13 to a maximum of 91. The cognitive FIM is the sum of the last five scores and ranges from a minimum of 5 to a maximum of 35(Deutsch et al, 1996).

The FIM instrument may be administered by any person who undergoes training. Training may include self-study of the guide, review of a training video or participation in a training workshop. Raters are clinicians including nurses, occupational therapists, physical therapists, speech/language pathologists, physicians and program evaluation/quality improvement coordinators (Deutsch et al, 1996).

The FIM instrument was to be used to track patients from the initiation of hospital care through discharge and follow-up. Periodic reassessment would measure changes in patient performance over time and would provide data to determine rehabilitation outcomes.

Investigations of the validity of the FIM instrument have shown that the scale has face validity(Hamilton, et al., 1987), construct validity(Dodds et al., 1993), and predictive validity(Wilson et al., 1991). But there has been no research trial to ascertain whether or not the FIM is valid, reliable, and useful in Korea culture.

Culture reflects the values and life style of the people who dwell in specific region. To use the new instrument in different country it most be modified to fit their culture. Because the FIM instrument is to evaluate level of the disability, It is not only important to translate

accurate language meaning, but also to modify differences due to life style to fit the other culture.

Even in various researches, the FIM instrument has proved its validity and reliability in many countries and is used broadly. In advance, accurate meaning of translation is very important to fit Korean culture. because one of the most important elements in undertaking educational evaluation and research projects involving the cross-cultural use of measurement instruments is the translation and validation of the instrument (Flaherty et al, 1988).

3. Stepwise Validation for Cross-Cultural Equivalence

Flaherty et al. (1988) proposed five major dimensions of cross-cultural equivalence: Content equivalence. The content of each item of the instrument is relevant to the phenomena of each culture being studied. Semantic equivalence. he meaning of each item is the same in each culture after translation into the language and idiom (written or oral) of each culture. Technical equivalence. The method of assessment is comparable in each culture with respect to the data that it yields. Criterion equivalence. The interpretation of the measurement of the variable remains the same when compared with the norm for each culture studied. Conceptual equivalence. The instrument is measuring the same theoretical construct in each culture.

In this study, the researcher used first two dimensions and process of research was as follows;

1) Translation of the original FIM instrument and guide into the Korean language
2) Content equivalence
3) Semantic equivalence through back translation

1) Initial translation of the original FIM instrument and guide into the Korean language

The translator is a bilingual person, teaching rehabilitation nursing in nursing school for 13 years, and taking care of disable persons who dwell in home situation for 8 years include one and half years of working experience in a rehabilitation center.

The translator translated FIM instrument and guide book including credentialing phase 1 kit (230 pages) for three months from the middle of September, 1998 to the middle of November, 1999.

The translator Changed some words and sentences to fit the Korean cultural situation: "certification No. residence" instead of "social security No.", "8 payment sources" instead of "16 payment sources", "total wons" instead of "total dollars", "full time: 44 hours instead of 40 hours/week", "Korean alphabet" instead of "English alphabet" and "Korean language" instead of "English".

original	modified
Social Security No.	certification No. of Residence
No. of ciphers : (3-2-4 = 9)	6-7 = 13
Payment Source : 16 Sources	8 Sources
Total dollars	Total wons
Fulltime 40 hours/week	44 hours/week
English name & address	Korean name & address
in the case study	in the case study

2) Content Equivalence

For the cross-cultural research, each item of the instrument must be scrutinized to determine whether the phenomenon it describes is relevant to another culture.

To establish the content equivalence of the Korean Version of the FIM, the translator checked the validity of each item with a team of content experts: three nursing faculty, two occupational therapy faculty, one medical doctor,

one Korean literary faculty, and one English literary faculty person. The non-statistical assessment of the logical tie between the elements or items of the FIM Korean version and guide book and its expert judgment of the entire FIM Korean version adequately represent the content items specified. The translator also requested the faculty to validate the Korean translation to make certain the words and sentences correspond to the interdisciplinary terminology in the Korea medical field. This process lasted three and one half months from the middle of Nov, 1998 to the end of February. 1999.

The most common criticism was that the writers used many different English words which mean the same thing. This made it difficult to translate. Since medical terminology originates in western countries, there is a lack of comprehensible terminology in Korea. Whenever Korean authors introduced western professional books or theories into the Korean educational system, they translated works to fit Korean medical terminology.

As a result, the translator used uniform Korean medical terms and references in new Korean medical dictionaries. There has been an attempt to use uniform standard words, with the same meaning throughout the translation. The following terms illustrate an English word translated into Korean. These translation are approved by both Korean and English literary faculty.

  Brace :
  device :
  orthosis :
  prosthesis :
  adaptive device :
  assistive device :
  impairment :
  disability :
  handicap :

3) Semantic equivalence through Back translation

The essence of semantic equivalence is that the meaning of each item remains the same after translation into the language of each culture. The key to establishing semantic equivalence is the back-translation technique described by Brislin(1970). First, a single bilingual person working on all items together translates the instrument from language A to language B. Second, the instrument is back-translated from language B back to language A by another bilingual person.

It was very hard to get a back translator of the FIM Korean version. The volume(47 pages) of the material to be translated was large.

The translator asked back translation to be done by a bilingual Korean nurse. Only the FIM Korean version 5.1 (not be guide book), and two cases of the credentialing kit (version 7) were completed during March 21 to 23, 1999.

Most of the sentences of the FIM instrument was simple and no used metaphors, so the sentences of the back-translation was resulted correspondence with original translation except follows.

1) added five sentences which were excluded in translation

(A) Eating item, level 6 : "If the individual relies on other means of alimentation, such as parenteral or gastrotomy feedings, then he/she administers the feedings him/herself"

(B) Transfer; Toilet item, level 7 "If in a wheelchair,-----. Performs safely".

(C) Social Interaction item, the end sentence of definition tree : "Subject does not require medication for control"

(D) In Social Interaction item, the end sentence of definition in the decision tree : "Subject does not require medication for

control".

(E) In decision tree of the Transfer; tub and shower item, "help to lift one leg into the tub".

2) Clarified phrases of the FIM for better understanding

(A) In bladder & bowel management item, The translator substituted 'No accident' into Korean as "No accident such as incontinence, bedpan or urinal spills, wetting, or soiling" and "no bowel movement accident" and "no voiding accident" instead of "no accident".

3) Added the word 'chopsticks' in the eating item category to fit Korean culture.

4) Fitted the sentence structure into Korean
Korean sentence structure is different from English sentence structure.
Example write English sentence = subject, + verb, + other information
write Korean sentence = subject, + object, +verb.
Correct Korean sentence structure and syntax was used throughout the translation.

5) Modified some sentences

(A) The term 'No accident' is too simple to define. There is the possibility that Korean people may interpret it as a car accident or bladder damage.
As a result, translator changed it into "voiding accident" and/or "bladder movement accident" to aid comprehension.

(B) In the grooming item, "combing and brushing" is just "combing" in Korea. So, the translator changed it to "combing and fixing up hair".

(C) In level 7 of the comprehension item, "not necessarily English" was exchanged to "not necessarily the Korean language".

(D) In levels five(5), four(4) and three(3) of the Bladder management and Bowel management items, I clarified terms by using correct Korean language sentence structure and syntax as follows.

level 5	less often than every two weeks	less than once during every two weeks
level 6	less often than weekly	less than once a week
level 6	less often than daily	less than once a day

4. Recommendation

1. Korean people use chopsticks. The word "chopsticks" need to be added in the eating item as follows.

1) "spoon, and chopsticks" is substituted instead of "spoon and fork"

2) If a disabled person used a fork due to hand disability, it might be considered a device. If so, the FIM score may be level 6.

3) It might be added for more clarifying information in the chapter "question and answer section".

Example:.

Q : In the Korean culture, chopsticks are used. If forks are used, is this considered on adaptive device ?

A : If the fork is purchased commercially, then it is not considered an assistive device. If the therapist adapts a fork, then it is considered an adaptive device. The score would reflect a Modified Independent level 6.

2. The FIM instrument was developed for use with all kinds of disabled people. It may be used to measure all patients who dwell in any type of institution including home situations. Korean traditional house structures

were built with heated floors and most Korean people live on the floor. The disabled Korean person can transfer from floor to chair or floor to bed without wheelchair. If the FIM instrument is used to measure patients who dwell in the Korean home situation, this is a limitation. To correct this, I suggest the following:

1) In transfer: bed, chair, wheelchair item, it might be revise to "transfer: bed(floor), chair, wheelchair" instead of the "transfer: bed, chair, wheelchair".

2) It might be added for more clarifying information in the "question and answer" section.

Example :

Q : In Korean culture, if anyone can transfer from a sitting position on the floor to a wheelchair, how can we measure his/her transfer ability using the FIM instrument ?

A : You can apply the same principles with the transfer; bed, chair, wheelchair item.

If a subject transfers in a sitting position in a safe and timely manner and with no device, the score is 7-Complete Independence. If the subject takes more than resonable time, there is a safety concern or the subject uses a device the score is 6-Modified Independence. A score of 5-Supervision or Setup is given if supervision is needed. If steadying assistance is required, or assistance with lifting one limb is needed, then the score is 4-Minimal Assistance. Once lifting of the body is required, the score is 3-Moderate Assistance. If a lot of lifting is needed the score is 2-Maximal Assistance. If the subject is unable to bear weight, and does not help at all, the score is 1-Total Assistance.

Example :

Q : In Korea, if anyone can move from here to there in the home in a sitting position in Korea, how can we measure it instead of locomotion; walk ?

A : You can apply the same principle as the Locomotion; walk, wheelchair and stairs. If a subject ambulates in a sitting position, a minimal 150feet (50 meters) in a safe and timely manner and with no device, the score is 7-Complete Independence. If the subject ambulates in a sitting position, a minimal 150feet (50 meters), but takes more than resonable time, there is a safety concern or the subject uses a device, the score is 6-Modified Independence. A score of 5-Supervision or Setup is if subject ambulates, in a sitting position only short distances (a minimum of 50 feet or 17 meters), independently with or without a device, takes more than reasonable time or there are safety considerations; and requires standby supervision, cuing or coaxing to go a minimum of 150 feet (50 meters). If subject performs 75% or more of locomotion effort to go a minimum of 150 feet (50 meters), the score is 4-Minimal Contact Assistance. If subject perform 50% to 74% of locomotion effort to go a minimum of 150 feet (50 meters), the score is 3-Moderate Assistance. If subject perform 25% to 49% of locomotion effort to go a minimum of 50 feet (17 meters) and requires assistance of one person only, The score is 2-Maximal Assistance. If subject perform less than 25% effort, or requires assistance of two people, or does not ambulate a minimum of 50 feet (17 meters), The score is 1-Total Assistance.

Q : In a Korean home setting, if a subject ambulates in a sitting position in the

home, and used a wheelchair outside, do you score the subject based on wheelchair mobility, movement in sitting, or both. Also, does distance of locomotion include total distance, sitting locomotion plus wheelchair locomotion ?

A : The score is based on the more frequent mode of Locomotion. If the subject used both, the distance of locomotion should be calculated for total distance.

5. Conclusion

For appling the FIM instrument in Korean culture, it might be wise to carefully consider modification of the few sentences to fit Korean life style and investigate the reliability of the FIM Korean version.

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